

# TCEQ Interoffice Memorandum

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**To:** File

**Thru:** Johnny Cosgrove, P.E., Team leader, Dam Safety Section

**From:** Robert Calderon, P.E.  and Lisa Bishop, P.E. 

**Date:** September 12, 2017

**Subject:** TXo3770 – Forest Lake Dam

TCEQ Dam Safety was notified by the owner (Jerry Nichols) of a failure of the Forest Lake Dam due to a storm event (Hurricane/Tropical storm Harvey) the week of August 26<sup>th</sup>, 2017. The owner requested a site visit and assessment of the structure. Dam Safety staff visited the dam on September 12, 2017 to observe the dam and assess the storm damage.

The owner stated that the storm event was approximately 28 inches of rain over a 3 day period and that the embankment near the drop-inlet service spillway overtopped and failed. There was evidence of overtopping in the vicinity of the service spillway (grass was matted and large amounts of sediment were deposited at the toe of the downstream slope). However, only minor erosion to the slope was noted in that area. In other areas, the debris lines appeared to be at or near the top of dam elevation. The emergency spillway, adjacent to the service spillway, did engage and was in good condition with little to no erosion noted. It is believed that the failure originated at the service spillway structure (owner noted that a pipe and drop structure had been installed approximately in June - 2016).

The following observations were noted as shown in the attached figure and photos: The breach was located at the left end of the dam (service spillway location) estimated at 30-Ft wide by 15-Ft high (**See Photos 1-10**). Portions of the drop-inlet spillway (48-in HDPE pipe) were carried downstream. The lake level was observed to be lowered to the approximate elevation of the bottom of the drop inlet. Large amounts of sediment were noted at the toe of the embankment and at the roadway and culvert approximately 100-Ft downstream of the dam.

The dam was last inspected on July 30, 2009 and was found in fair condition. Based on that inspection and all other dam safety records, the height of the dam is 16 feet with an estimated normal capacity of the reservoir of 103 acre-feet and a maximum capacity of 148 acre-feet.

Lastly, as was discussed with the owner during this recent assessment, the dam is currently exempt from Dam Safety inspections and regulations. Per House Bill 2694

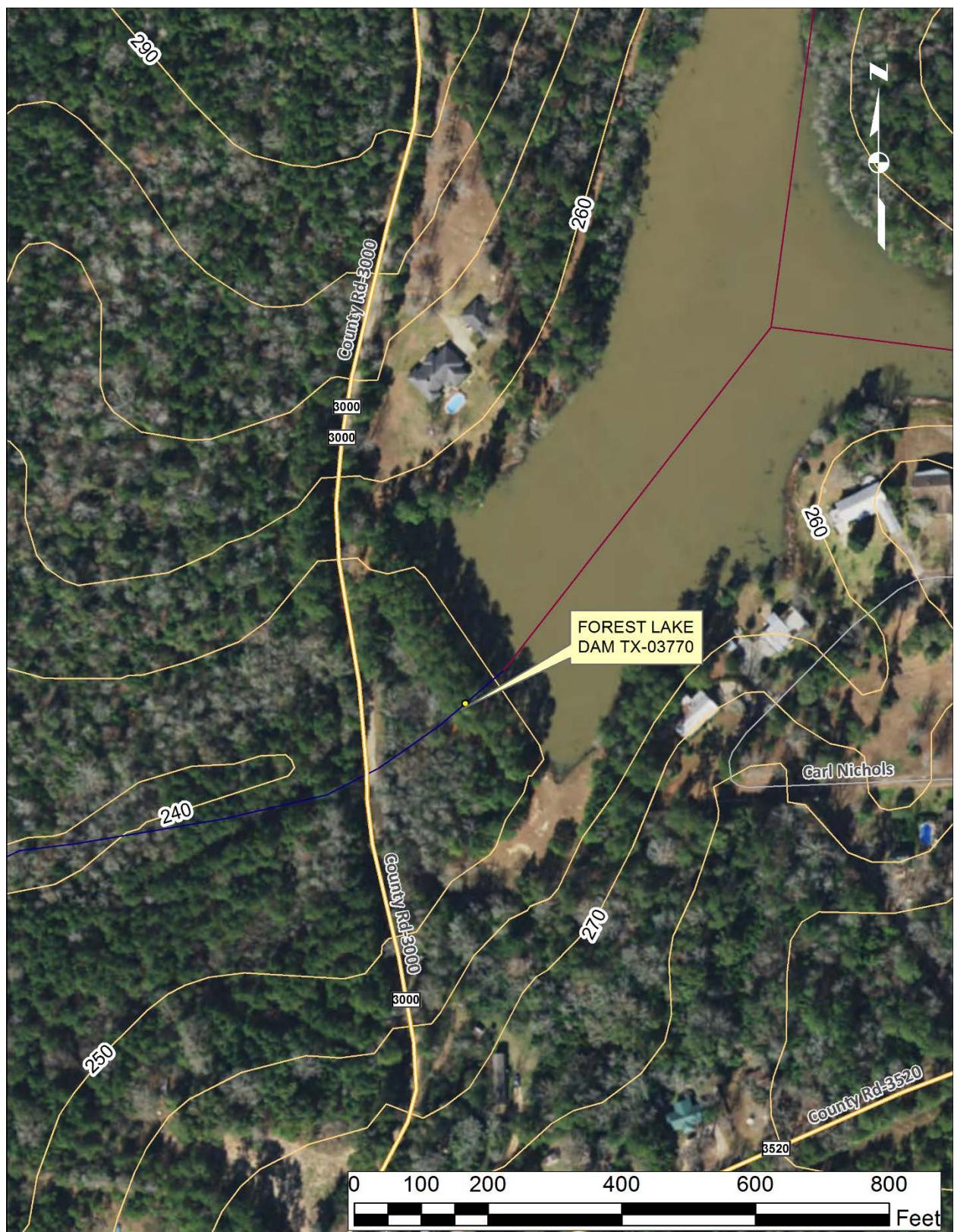
from the 82<sup>nd</sup> Texas Legislative Session, dams meeting the 5 criteria noted below will be exempted from regulation through the Dam Safety Program. Those criteria are summarized as follows:

1. Dam is privately owned,
2. Dam has a maximum capacity of less than 500 ac-ft,
3. Dam has a hazard classification of low or significant,
4. Dam is located outside a city limit, and
5. Dam located in a county with population less than 350,000 as of 2010 census.

Based on these criteria, the Forest Lake Dam does meet the qualifications for exempt status. The dam owner is still required to maintain the dam in safe condition and the exempt status may be changed if downstream conditions change which would warrant an increase of the hazard classification to high. However, at this time, no further inspections of the dam will be scheduled through the Dam Safety program.

If the owner chooses to rebuild the dam, coordination with TCEQ Dam Safety will need to take place to ensure the current exempt status is still valid based on the proposed dam re-construction. If the decision is made to permanently breach the dam, it is recommended that plans be designed to allow for a wide enough opening to keep the reservoir from increasing and causing an unsafe condition for potential downstream hazards, as this will limit the dam owner's liability.

**Figure 1—Aerial View (2016)  
Forest Lake Dam - 10' Contours**





**Photo 1:** View of breach at approximate location where service spillway was located looking northeast.



**Photo 2:** View of breach at approximate location where service spillway was located looking southwest. Note the concrete base and spillway outlet pipe (48-in HDPE).



**Photo 3** Panoramic view of the upstream slope and breach at the left end of the dam looking northwest.



**Photo 4:** View of breach at approximate location where service spillway was located looking west. Note the scale and height of the breach with dog and person noted along top of the embankment (breach estimated at 15-Ft high by 30-Ft wide).



**Photo 5:** View of the emergency spillway looking southwest. Note the grassy area (emergency spillway) held up and the breach occurred to the right of this area.



**Photo 6:** View of breach looking southeast. Note the scale and height of the breach with people along top of the emergency spillway area.



**Photo 7:** View downstream of the service spillway looking southwest. Note the spillway pipes carried downstream as a result of the breach.



**Photo 8:** View of the downstream slope looking east. Note this area was overtopped as noted by the matted grass and minor areas of erosion (arrows) from scour.



**Photo 9:** Panoramic view of the downstream toe and area beyond the slope looking west. Note the large amount of sediment (arrows) that was deposited downstream of the embankment.



**Photo 10:** View of the roadway (Carlow Road) approximately 100-Ft downstream of the dam. Note the sediment that was deposited on the roadway.